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RECEIVED

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Ms. Wendy R. Dixon
EIS Project Manager
M/S 010
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, NV 89036-0307

RE: July 1999 Draft Environmental Impact Statement
Geologic Repository for the Disposal of High-Level Radioactive Waste
Yucca Mountain, Nye County, Nevada

Dear Ms. Dixon:

The Denver Department of Environmental Health (DEH) submits the following comments on the U.S. Department of Energy's (DOE's) planned shipment of nuclear materials for disposal at Yucca Mountain, Nevada, as presented in the July 1999 Draft of the *Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (DOE/EIS-0250D)*. Because it is DEH's mandate to protect the health and welfare of Denver's residents and visitors, our comments are limited to issues relating to the possible transportation of radioactive materials through the Denver, Colorado area.

- 1 While we recognize the necessity of nuclear material transportation to clean up radioactive waste sites such as the Rocky Flats site directly northwest of Denver, we believe that transportation policies must protect population centers. Large amounts of radioactive wastes will be transported through Denver and the Denver metropolitan area due to the cleanup at Rocky Flats, even without the addition of wastes transported from other locations. Due to the transportation risks to which Denver already will be subjected and the large populations at risk in Denver, DOE must preclude the shipment through Denver of nuclear waste materials that are not of local origin. In particular, DOE should address the following areas of concern.

- 2...
 1. **Risk Minimization Strategies:** DOE must avoid putting large population centers, such as Denver, at greater risk from waste shipments.

DOE must commit to risk minimization strategies during the scheduling of waste shipments, and must clarify these risk minimization strategies. One important risk minimization strategy is to

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choose transportation routes that avoid centers of population. More than 1.5 million people live in the greater Denver area, with more than 0.5 million of these located in Denver proper. Nearly 50 percent of the population of Denver (approximately 230,000 individuals) lives within 2 miles of I-25 (the main North-South highway artery). Downtown Denver has the highest concentration of employees in the Rocky Mountain region, employing more than 10 percent of the metropolitan Denver workforce. In addition, approximately 7 million tourists visit Denver every year. DOE must consider the number of individuals living, working, and visiting in the Denver area when scheduling shipments to Yucca Mountain.

Also, Denver's highways carry a great deal of traffic that is frequently subject to slowdowns, traffic jams, and construction delays. Transport on Denver's highways during periods of high traffic volume increases risks to area residents from "incident-free" exposures during traffic delays (i.e., external radiation dose from proximity to shipping containers) and increases the risk of an accidental release within a population center. Any shipments travelling through Denver must be scheduled to avoid periods of high traffic volume (i.e., rush hours). Additionally, several major construction projects are planned for Denver highways, including the addition of traffic lanes and light rail lanes. Yucca Mountain waste transportation should be scheduled to avoid these construction projects, as significant traffic delays are likely.

- 3 2. **Populations Susceptible to Increased Exposure:** *Waste shipments must avoid areas with difficult to evacuate populations.*

Within Denver, there are large numbers of schools, daycare centers, hospitals, nursing homes, and detention facilities located within two miles of the interstate highways. Effective evacuation of these facilities in the event of an accidental release would be nearly impossible. DOE should avoid routing waste shipments through areas with large numbers of facilities containing populations that are difficult to evacuate.

- 4 3. **Need for Complete Analysis of Routes:** *Denver is unable to interpret risks to our population given the limited information provided. DOE should provide route-specific analyses of risks for the Denver area, so that interested parties can evaluate the appropriateness of DOE's input parameters and conclusions.*

The DOE/EIS does not provide data on the specific routes to be used for the shipment of wastes. Therefore, we are unable to evaluate adequately and provide comments on many of the inputs used in the risk calculations. We cannot calculate nor explain the estimated risk to which our population will be subjected. DEH is concerned about the large number of shipments that are planned for the various transportation scenarios. The DOE/EIS scenario estimates range from 49,523 truck shipments and 300 rail shipments under the "mostly truck" scenario, to 2,601 truck shipments and 10,815 rail shipments under the "mostly rail" scenario, over the planned 24 year time period (values from Table J-1). Per the DOE/EIS, this number of shipments could almost double if it is decided to include Module 1 and Module 2 wastes for disposal at Yucca Mountain. It is imperative that DOE provide additional data and risk calculations specific for the planned routes of transport, such that those along the planned routes can evaluate and understand associated risks. Obviously, transportation must be conducted to minimize risks whenever possible.

- 5 4. **Meteorology:** *The potential for atmospheric inversions increases risks to Denver residents from accidental releases. DEH assumes these risks are unacceptable, until demonstrated otherwise by DOE.*

In the DOE/EIS, accidental release scenarios are calculated using two meteorological conditions, the most conservative of which is stated to be "...stable (slowly dispersing) conditions that would not be exceeded (more still) about 95 percent of the time..." (pg. 6-30), as based on national weather data (pg. J-8). Weather conditions in the Denver area can differ significantly from those in other parts of the country. During the winter months, the Denver air basin commonly experiences atmospheric inversion layers that trap air constituents near ground level and prevent dispersion. DOE must provide documentation that the air modeling procedures conducted in the DOE/EIS are conservative for the inversion/stable weather conditions that may occur in the Denver area.

- 6 5. **Current Data:** *The use of 1990 census data is inappropriate for the calculation of risks to Denver area residents. DOE should update their risk calculations with the most recent census data, as soon as they are available.*

The DOE/EIS states that risks were calculated using 1990 census data. The Denver area has one of the fastest growing populations in the United States. As soon as possible, updated census data should be used in the calculation of risk estimates (e.g., population densities along each route, including railroads), and these data should be considered during the planning of waste shipment routes. The routes should be designed to minimize transport through areas of high population density.

Additionally, as the DOE/EIS states that potential risks from accidental release scenarios were calculated based on "state-specific accident rates" (pg. J-8), DEH encourages DOE to use the most recent data available, because the Denver area has recently experienced a large increase in automobile traffic.

- 7 6. **Compliance with State Hazardous Materials Routing Regulations:** *Colorado law precludes the shipment of nuclear materials on much of I-70. The unavailability of I-70 makes Denver highways unattractive as shipping routes to Yucca Mountain.*

DOE must comply with the State of Colorado's *Rules and Regulations Concerning Nuclear Materials Transportation Route Designation* (8CCR 1507-6). Among other requirements, these regulations preclude the shipment of nuclear materials on I-70 west of Denver, between the junction of U.S. 40 and the Colorado-Utah state line, and on I-70 east of I-25 to the junction with State Highway 2. As all shipments directed through Denver must either travel north or south before being directed west to Yucca Mountain, it will be much more effective to direct shipments to the north or south prior to entering the Denver metro area.

- 8... 7. **Responsibility:** *DOE must use routes that minimize risk, and not allow use of less-safe routes to shorten shipping distance or times.*

It is DOE's responsibility to select appropriate shipment modes and routes, and not defer this responsibility to subcontractors that may have potential economic conflicts with the

8 cont. | minimization of risks, such as the desire to inappropriately shorten shipping distances or times.

9 | 8. **Acceptable Risks:** *Cancer risks of 1×10^{-3} are unacceptable to Denver residents and workers.*

While DEH understands that the maximally exposed service station worker scenario is unlikely (service station worker exposed to 430 truck shipments per year for 24 years), DEH takes exception to a characterization of "very low" risk for the calculated probability of 1.2×10^{-3} , for a latent fatal cancer. Individual cancer risk estimates in the range of 1×10^{-3} are unacceptable for Denver residents and workers, and are recognized as unacceptable in environmental regulation.

10 | 9. **Adequate Characterization of Radiological Materials:** *All nuclear materials must be adequately characterized.*

DEH notes that comments made at the November 16, 1999 public hearing in Denver (e.g., *Statement of Robert J. Halstead on behalf of the State of Nevada Agency for Nuclear Projects*) indicate that DOE has not appropriately characterized the "typical" radioactive materials that will be shipped to Yucca Mountain. While DEH recognizes DOE/EIS claims that actual shipments will have external dose rates below regulatory values (pg. J-48), radiological waste shipments must be appropriately and adequately characterized in order to obtain meaningful estimates of transportation-related risk. This characterization is especially important in the analysis of potential accidental release scenarios.

11 | DEH appreciates the opportunity to comment on the DOE/EIS. We reiterate that additional specific
12 | information, such as possible shipment modes and routes, is necessary in order for stakeholders to
adequately assess the appropriateness of data used in the DOE/EIS. Also, DOE should minimize or
prohibit the shipment of waste materials through large centers of population, such as the Denver
area. If you have questions regarding these comments please contact Gene Hook of my staff at 303-
285-4009.

Sincerely,



Theresa M. Donahue
Manager